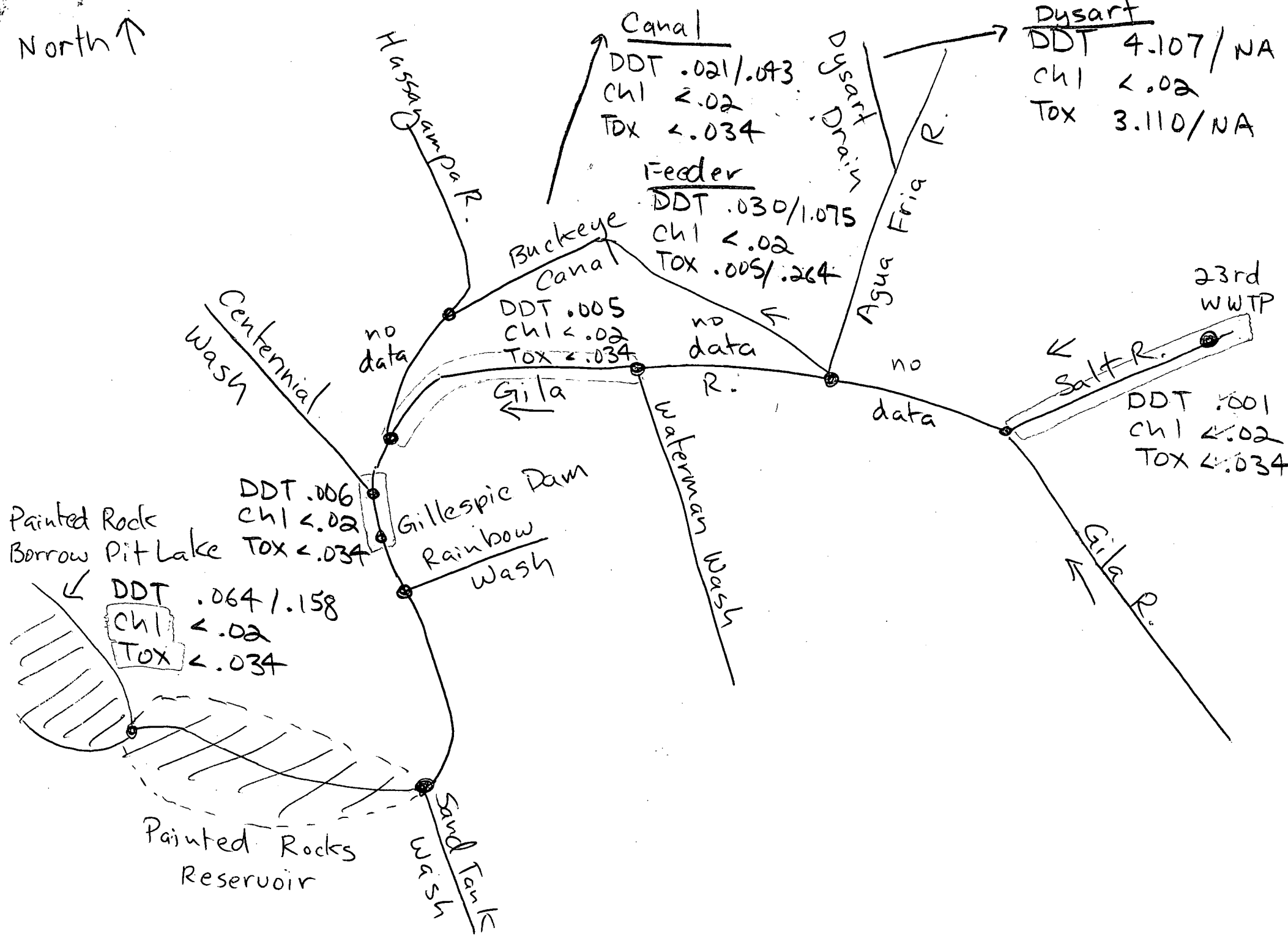
Virgin River Beaver Dam Wash to Big Bend Wash 15010010-003	10.1 mi	Selenium (total) and suspended sediment concentration (2004), *E. coli* (2010)
Colorado-Lower Gila Watershed		
Colorado River Hoover Dam to Lake Mohave 15030101-015	40.4 mi	Selenium (total) (2004)
Colorado River Bill Williams River to Osborne Wash 15030104-020	13.4 mi	Selenium (total) (2010)
Colorado River Main Canal to Mexico border 15030107-001	32.2 mi	Low dissolved oxygen and selenium (total) (2006)
Colorado River Imperial Dam to Gila River 15030107-003	15.3 mi	Selenium (total) (2010)
Gila River Coyote Wash to Fortuna Wash 15070201-003	28.3 mi	Selenium (total) and boron (total) (2004)
Lake Mohave 15030101-0960	27044 a	Selenium (total) (2010)
Painted Rock Borrow Pit Lake 15070201-1010	186 a	Low dissolved oxygen (1992)
Little Colorado Watershed		
Bear Canyon Lake 15020008-0130	55 a	Low pH (2004- EPA)
Black Canyon Lake 15020010-0180	37.4 a	Ammonia (2010)
Lyman Lake 15020001-0850	1308 a	Mercury in fish tissue (2004- EPA)
Pintail Lake 15020005-5000	25.7 a	Ammonia (2010)
Puerco River Dead Wash to Ninemile Wash 15020007-007	0.2 mi	Copper (dissolved) (2010), *E. coli* (**2012**)
Telephone Lake 15020005-1500	22.3 a	Ammonia (2010)
Middle Gila Watershed		
Agua Fria River Sycamore Creek to Bishop Creek 15070102-023	9.1 mi	*E. coli* (2010)
Alvord Lake 15060106B-0050	27 a	Ammonia (2004)
Arnett Creek Headwaters to Queen Creek 15050100-1818	11.1 mi	Copper (dissolved) (2010)
Chaparral Park Lake 15060106B-0300	12 a	Low dissolved oxygen and *E. coli* (2004)
Cortez Park Lake 15060106B-0410	2 a	Low dissolved oxygen and high pH (2004)
Gila River San Pedro River to Mineral Creek 15050100-008	19.8 mi	Suspended sediment concentration (2006)
Gila River Centennial Wash - Gillespie Dam 15070101-008	5.3 mi	Selenium (total) (2004), boron (total) (1992)
Lake Pleasant 15070102-1100	8000 a	Mercury in fish tissue (2006- EPA)
Mineral Creek Devil's Canyon to Gila River 15050100-012B	19.6 mi	Copper (dissolved) (1992), selenium (total) (2004), low dissolved oxygen (2006)
Queen Creek Headwaters to Superior WWTP discharge 15050100-014A	8.8 mi	Copper (dissolved) (2002), lead (total) (2010), selenium (total) (**2012**)

Tonto Creek Greenback Creek to Roosevelt Lake 15060105-0004	2.6 mi	Mercury in fish tissue (2010-EPA)
San Pedro Watershed		
Brewery Gulch Headwaters to Mule Gulch 15080301-337	1 mi	Copper (dissolved) (2004)
Mule Gulch Headwaters to above Lavender Pit 15080301-090A	3 mi	Copper (dissolved) (1990)
Mule Gulch Above Lavender Pit to Bisbee WWTP discharge 15080301-090B	0.8 miles	Copper (dissolved) (1990)
Mule Gulch Bisbee WWTP discharge to Highway 80 bridge 15080301-090C	3.8 mi	Copper (total and dissolved) (1990)
San Pedro River Mexico border to Charleston 15050202-008	28.3 mi	*E. coli* and copper (dissolved) (2010)
San Pedro River Babocomari Creek to Dragoon Wash 15050202-003	17 mi	*E. coli* (2004)
Santa Cruz Watershed		
Nogales Wash Mexico border to Potrero Creek 15050301-011	6.2 mi	Ammonia (2004), chlorine (1996), copper (dissolved) (2004), *E. coli* (1998)
Parker Canyon Lake 15050301-1040	130 a	Mercury in fish tissue (2004- EPA)
Potrero Creek Interstate 19 to Santa Cruz River 15050301-500B	4.9 mi	Chlorine, low dissolved oxygen, and *E. coli* (2010)
Rose Canyon Lake 15050302-1260	7 a	Low pH (2004- EPA)
Santa Cruz River Josephine Canyon to Tubac Bridge 15050301-008A	4.8 mi	Ammonia and *E. coli* (2010)
Santa Cruz River Nogales WWTP to Josephine Canyon 15050301-009 *Also on Not Attaining (4B) List	9.1 mi	Cadmium (dissolved), *E. coli* (**2012**)
Sonoita Creek 1600 feet below Patagonia WWTP discharge to Patagonia Lake 15050301-013C	8.9 mi	Zinc (total) (2004), low dissolved oxygen (1998)
Upper Gila Watershed		
Blue River Strayhorse Creek to San Francisco River 15040004-025B	25.4 mi	*E. coli* (2006)
Cave Creek Headwaters to South Fork Cave Creek 15040006-852A	7.5 mi	Selenium (total) (2004)
Gila River Apache Creek to Skully Creek 15040002-002	6.4 mi	*E. coli* (2010)
Gila River Bonita Creek to Yuma Wash 15040005-022 *Also on Not Attaining (4A) List	5.8 mi	Lead (total) (2010)
Gila River Skully Creek to San Francisco River 15040002-001	15.2 mi	*E. coli* (2010)


North
Hassayampa R.
Canal
DDT .021/.043
Chl <.02
Tox <.034
Dysart Drain
Dysart
DDT 4.107/NA
Chl <.02
Tox 3.110/NA
Feeder
DDT .030/1.075
Chl <.02
Tox .005/.264
Agua Fria R.
Buckeye Canal
DDT .005
Chl <.02
Tox <.034
Centennial Wash
no data
no data
no data
23rd WWTP
Salt R.
DDT .001
Chl <.02
Tox <.034
Gila R.
Gila R.
Waterman Wash
DDT .006
Chl <.02
Tox <.034
Gillespic Dam
Rainbow Wash
Painted Rock Borrow Pit Lake
DDT .064/1.158
Chl <.02
Tox <.034
Painted Rocks Reservoir
Sand Tank Wash

11-605(E)(2)(a)(vi). There is no statement in the TMDL statute or implementing impaired water identification regulations that this statutory prohibition on listing will apply only when it is determined that there are no human-caused influences. Rather, based on the plain language of the statute, if there is evidence that pollutant loadings from naturally occurring conditions alone (*i.e.*, without consideration of human-caused influences) would be sufficient to cause a violation of applicable standards, such a water should not be listed as impaired regardless of the presence of human-caused conditions. In such instances, such a water should be a candidate for adoption of appropriate site-specific standards that account for naturally occurring conditions before any listing decisions are made. If this process is not followed, it can result in inappropriate permitting restrictions on potential and existing discharges even when the appropriate standards has not been adopted or evaluated.

Unfortunately, ADEQ's draft Assessment Methods document completely ignores the statutory prohibition on listing in A.R.S. § 49-232(D). Rather, the Assessment Methods document attempts to equate the statutory prohibition to language in Arizona's surface water quality standards on natural background that was adopted in 1992 several years before adoption of Arizona's TMDL statute. This language should be removed from the Assessment Methods document and replaced by language consistent with the statutory listing prohibition in A.R.S. § 49-232(D). Such revised language should clarify that if there is evidence that naturally occurring conditions alone would cause an exceedance of applicable standards in a particular surface water, the water will not be listed as impaired consistent with A.R.S. § 49-232(D) pending adoption of appropriate site-specific standards, which account for the contribution from such naturally occurring conditions.

Methods Response #2- ADEQ does not agree with FMC's interpretation of A.R.S. § 49-232(D) or that the Assessment Methods are inconsistent with the TMDL statute. Where natural conditions alone are the source of water quality standard exceedances impairment determinations are not made. Examples of this rationale can be seen in the 2010 Integrated Report (see JK Mountain and Ellis Ranch Tributaries in the Salt River watershed). As there are no anthropogenic sources within these watersheds, natural background alone caused the exceedances. Both of these waters were placed in Category 3, "inconclusive". These waters are not included in the 2012/14 Integrated Report as no water quality data are available within the data range used in the assessment.

In the two cases where ADEQ may pursue a site specific standard, Pinto Creek and Mule Gulch, the initial 303(d) listings were not made based on natural background exceedances rather exceedances measured at sampling points downstream of anthropogenic sources.

Methods Comment #3- Use of Individual Grab Samples for Assessing Compliance with Chronic Criteria: The draft Assessment Methods document (see Section 5, pages 30-32) attempts to justify use of individual grab samples for assessing compliance with chronic criteria. ADEQ's justification, however, is directly contradicted by preamble language from ADEQ's final impaired water identification rule and from preamble language explaining the use of the standards language in A.A.C. R18-11-120(C).

Based on ADEQ's response to comments on the IWIR preamble, FMC believes ADEQ intended that assessment of the chronic water quality standard under the impaired water identification rule would require multiple sampling events, consistent with the surface water quality standard for chronic criteria in A.A.C. R18-11-120(C), to amass the minimum number of samples to find even one exceedance of the standard. ADEQ's practice of using the results from one grab or discrete sample to find one exceedance is directly inconsistent with the clear explanation in the preamble of how the impaired water identification rule would be implemented for assessment of chronic water quality standards.

Consistent with ADEQ's on-point preamble language in the impaired water identification rule, Arizona's surface water quality standards provide that "[c]ompliance with chronic aquatic and wildlife criteria shall be determined from the geometric mean of the analytical results of the last four samples taken at least 24 hours apart." A.A.C. R18-11-120(C)). This regulatory language was amended during Arizona's 2002 triennial review of the state's surface water quality standards to remove the requirement that the samples for determining compliance with the chronic standard had to be collected over a period of four consecutive days.

Response #3- ADEQ does not make any impairment determinations based upon one exceedance of a water quality standard, instead the criteria for determining impairment are set forth in the IWIR (R18-11-605). The Assessment Methods document defines a chronic exceedance as, "1 grab sample exceeds a criterion and absence of contextual information indicating unstable conditions; or the median value of at least 4 samples taken 24 hours apart exceeds a criterion" see Assessment Criteria Summary Table on page 20. When sufficient data are available a median value is calculated as indicated on page 31 of the Assessments Methods document, "If at least four days of data are available within a seven-day period, ADEQ uses the central tendency of the dataset to determine whether an exceedance has occurred." Page 30 continues with a discussion of when and how ADEQ will use grab samples in assessing chronic criteria.

ADEQ agrees that contradictions between the 2002 IWIR and its preamble language exist. However, ADEQ's use of grab sample results to assess attainment of chronic aquatic and wildlife standards along with the Department's use of available contextual information to

Freeport Minerals Corporation (FMC)

FMC Comments on 2012/14 Integrated Report

Chapter 2 Comment #1 -Bill Williams Watershed: Bridle Creek (Headwaters to Santa Maria River). The designated uses identified on the summary page for this segment suggest that ADEQ considers Bridle Creek to be intermittent or perennial. The assessment summary should be revised to accurately reflect the ephemeral flow regime of Bridle Creek.

Response #1- ADEQ reviewed data collected from two sample sites located along Bridle Creek, current and historic aerial photographs and field observations made by ADEQ staff. While there appears to be intermittent flow near the mouth of Bridle Creek, the sample sites located along Arizona Highway 97 are nine miles upstream of this intermittent reach with no indication of intermittent or perennial flow observed at the sample site locations. ADEQ changed the designated uses of Bridle Creek to be consistent with A.A.C. R18-11-105. The waterbody summary has been updated to reflect the change in designated uses but remains inconclusive and place in Category 3.

Chapter 2 Comment #2- Bill Williams Watershed: Burro Creek (Francis Creek to Boulder Creek). The summary page identifies a single exceedance for cadmium based on a sample collected on December 4, 2007. This sample was not representative of normal flow conditions and should be removed. In fact, ADEQ already agreed to remove this exceedance from this reach of Burro Creek in response to comments submitted on the 2010 Integrated report (*see* 18 A.A.R. 1410 (June 22, 2012)). The summary page for this segment also identifies a biocriteria exceedance and refers to Appendix G for a discussion of the application of the biocriteria water quality standards. Appendix G is not yet listed on the ADEQ website page for the draft 2012/2014 Integrated report.

Response #2- ADEQ removed the chronic exceedance based on the elevated turbidity level measured at the time the sample was collected, indicating potentially unstable conditions. Appendix G which, in the 2010 Integrated Report, contained a discussion of ADEQ's Biocriteria Implementation Procedures and data was not included in the draft 2012/14 Integrated Report. The reference to Appendix G has been removed from this summary page. The biocriteria data have been included in the 2012/14 report to inform stakeholders where potential violations were observed based upon the current draft implementation procedures. No biocriteria impairment determinations were made in the 2012/14 Assessment. An Appendix G- TMDL Priority Ranking was added the 2012/14 Integrated Report in response to EPA Comment #1.

Chapter 2 Comment #3- Bill Williams Watershed: Coors Lake. The jurisdictional status of this surface feature is questionable because it is an isolated, man-made impoundment. Since only jurisdictional waters of the US can be identified as impaired waters under federal and state laws, Coors Lake should be removed from Category 5 and from the 2012/2014 Integrated report. At the very least, the high priority for TMDL development suggested in the summary page and elsewhere in the report should be changed to "low" given the suspect jurisdictional status of the impoundment and because naturally occurring conditions arguably would be the only contributor to the alleged impairment and no effective analytical tools exist to develop a TMDL for Coors Lake (*see* A.A.C. R18-11-606(B)(3)(h), (i)).

Response #3- Coors Lake is listed in A.A.C. R18-11 Appendix B and is assigned the fish consumption designated use. A fish tissue consumption advisory was issued in 2004 leading EPA to add the lake to the 2004 303(d) List. ADEQ is not aware of any jurisdictional determination being made for the lake. The high priority assigned to the lake is based upon the Impaired Waters Identification Rule (A.A.C. R 18-11, Article 6). However, ADEQ is not pursuing the development of a TMDL at this time. Appendix G lists the lake as a low priority for TMDL development.

Chapter 2 Comment #4- Salt Watershed: Bloody Tanks Wash (Schultze Ranch to Miami Wash). The summary page for this segment references one copper exceedance from a single sample collected on February 8, 2008. However, although this segment of Bloody Tanks is correctly identified on the summary page as ephemeral, the page lists an acute standard for copper that is not correct and a chronic standard that is not applicable. The summary page also recommends collection of more dissolved copper samples due to the exceedance. ADEQ should not be spending its limited resources attempting to collect water samples in ephemeral waters that are inherently not reliable, reproducible, or representative. The monitoring recommendation should be removed from the summary page for this segment.

Response #4: The commenter is correct that the numeric standards listed on the summary page are not correct and that there is no applicable chronic dissolved copper standard for ephemeral waters. Reference to an applicable dissolved chronic standard for this reach has been removed from the waterbody summary page. However, the correct acute ephemeral dissolved copper standard equals 14.83 ug/L at a hardness of 62 mg/L. The dissolved copper result of 46 ug/L on 2/5/2008 exceeds the applicable acute standard. The monitoring recommendations do not require ADEQ to conduct follow up monitoring. Rather the recommendations state what parameters should be included in the analytical suite if additional samples are collected by ADEQ or another entity. ,

ADEQ's 303(d) List and supporting documentation are submitted to EPA for review. The ADEQ submission to EPA will contain the 303(d) List, including the pollutants or suspected pollutants impairing water quality; the surface waters targeted for Total Maximum Daily Load (TMDL) development; a priority ranking and schedule for TMDL development; a description of the process used to develop the 303(d) List; the basis for listing decisions, including reasons for not including a surface water or segment on the list; and a summary of ADEQ responses to public comments received on the draft list. 40 CFR 130.7(b)(6)(iv) requires a state to demonstrate "good cause" for not listing a surface water where there are exceedances of water quality standards and places the burden of proof on the state to justify excluding a surface water from the list. "Good cause" factors include more recent or accurate data, flaws in the original analysis, more sophisticated water quality modeling, or changes in the conditions that demonstrate that the surface water is no longer impaired.

The 303(d) List was due to be submitted to the U.S. Environmental Protection Agency on or before April 1, 2012. State law requires that the initial 303(d) List be published in the *Arizona Administrative Register* at least 45 days before the list is submitted to the Regional Administrator. The list of impaired waters that ADEQ plans to submit to EPA is contained in the table titled "Arizona's 2012/14 303(d) List of Impaired Waters" published in Section 7 of this notice.

EPA has added impaired waters to Arizona's 303(d) List in previous assessment cycles. These EPA listings do not meet the requirements of A.R.S. 49-232 or impaired water identification criteria established in ADEQ's Impaired Water Identification Rules (A.A.C. R18-11-601 through R18-11-606) but do meet federal requirements.

5. Arizona laws governing ADEQ identification of impaired waters and preparation of the 303(d) List

The Arizona Legislature enacted laws governing ADEQ's development of the 303(d) List in 2000. A.R.S. 49-232(B) requires that ADEQ consider only "reasonably current, credible and scientifically defensible" data that the ADEQ has collected or received from another source in determining whether a water body is an impaired water. The results of water sampling or other assessments of water quality are considered credible and scientifically defensible data only if ADEQ has determined:

1. Appropriate quality assurance and quality control procedures were followed and documented in collecting and analyzing the data;
2. The samples or analyses are representative of water quality conditions at the time the data was collected;
3. The data consists of an adequate number of samples based on the water body in question and the parameters being analyzed; and
4. The method of sampling and analysis, including analytical, statistical and modeling methods, is generally accepted and validated in the scientific community as appropriate for use in assessing the condition of the water.

ADEQ considered reasonable current, credible and scientifically defensible data in preparing 2012/14 draft 303(d) List (the Impaired Water Identification Rule (IWIR)). The water quality data and information that ADEQ considered are summarized in the 2012/14 Integrated Report.

In 2002 ADEQ adopted, by rule, the methodology used in identifying waters as impaired. These rules specify the following:

1. Minimum data requirements and quality assurance and quality control requirements consistent with the requirements of A.R.S. 49-232(B)(1-4).
2. Appropriate sampling, analytical and scientific techniques that may be used in assessing whether a water is impaired.
3. Any statistical or modeling techniques that ADEQ uses to assess or interpret data.
4. Criteria for including and removing waters from the list of impaired waters, including any implementation procedures used for identifying impaired waters on the basis of exceedances of narrative water quality standards.

ADEQ prepared the 2012/14 Integrated Report in accordance with its IWIR that ADEQ adopted in 2002 [*See* A.A.C. R18-11-601 through R18-11-606]. In addition, ADEQ prepared a guidance document that provides additional information on the assessment methods ADEQ uses to identify impaired waters. This guidance document is titled *Surface Water Assessment Methods and Technical Support* (May, 2014).

Under A.R.S. 49-232(D), ADEQ must consider available data in light of the nature of each water body being assessed (including whether a water body is an ephemeral water) when determining whether to include a water body on the 303(d) List of impaired waters.

ADEQ is prohibited by A.R.S. 49-232(F) from listing a water body as impaired based on a violation of a narrative or biological water quality standard prior to adopting implementation procedures identifying the objective bases for determining that a violation of the standard exists. None of the waters identified by
ADEQ on the 2012/14 303(d) List are listed because of violations of narrative or biological water quality standards.

ARIZONA DEPARTMENT
OF
ENVIRONMENTAL QUALITY

Douglas A. Ducey
Governor

Henry R. Darwin
Director

March 6, 2014

Jane Diamond, Director
Water Division
U.S. Environmental Protection Agency Region 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Re: 2012/14 303(d) List

Dear Ms. Diamond,

ADEQ is pleased to submit Arizona's final *2012/14 303(d) List of Impaired Waters* for your approval.

We have also attached a copy of the Notice of Public Information (NPI) which published in the Arizona Administrative Register on January 9, 2015. The NPI contains Arizona's draft 303(d) List of impaired waters and provides notice of ADEQ's intent to submit the draft list to EPA Region 9 for review and approval. The NPI includes ADEQ responses to comments that were received on the draft 303(d) List.

If your staff have any questions or require additional data or information to complete their review of the draft 303(d) List, please contact Jason Sutter at (602) 771-4468.

Sincerely,

Trevor Baggiore, Director
Water Quality Division